Ethnic and regional inequalities in the Russian military fatalities in the 2022 war in Ukraine

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Abstract

This paper explores ethnic and regional inequalities in mortality in the Russian army during the 2022 war in Ukraine. The analysis is based on a newly available data set containing the names of about 9,500 Russian servicemen killed in Ukraine from February to November 2022. The data set was collected by a team of volunteers from the social media and other available sources. There are large inequalities in the army mortality rates across Russian regions, with the highest mortality of soldiers originating from poor regions in Siberia and the Russian Far East and the lowest from Moscow and St.Petersburg. Some ethnic minority groups, in particular Buryats and Tuvans, are overrepresented among the fatalities, compared to their population share. Once regional inequalities are taken into account, ethnic gaps in mortality are reduced substantially. It is likely that ethnic fatality gaps are largely driven by socio-economic inequalities: young men in poorer regions see the career in the military as more attractive. The paper places these findings in the context of the previous research on inequalities in US military casualties.

1 Introduction

On 24 February 2022 the Russian army invaded Ukraine in an attempt to overthrow the Ukrainian government and establish Russian control over the country. A "special military operation" that was likely planned to succeed in a few weeks turned into a long and grinding war that claimed tens of thousands of lives of Ukrainians and destroyed large parts of the Ukrainian economy and infrastructure.

The Russian military suffered severe casualties in the war. Their extent remains not fully known as trustworthy data have not been published by the Russian state. The Russian Ministry of Defence claimed 5,937 deaths of the Russian military personnel as of 21 September 2022 (Meduza, 2022), but this is likely an underestimation. In November 2022, a top US general estimated the total Russian losses at about 100,000 people (both killed and wounded), with about the same level of casualties in the Ukrainian army (Lock, 2022).

It was suggested in the media that a large part of the rank and file Russian military were in fact not ethnic Russians but soldiers from Russia's ethnic minorities that were effectively used by the Russian state as "cannon fodder" (Ivanova et al., 2022; Petkova, 2022; Mackinnon, 2022; Roth, 2022; Cuesta and

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Sahuquillo, 2022). This provoked a public debate both in Russia (where a number of activists in ethnic republics protested against the war) and internationally. In November 2022, Pope Francis said in an interview for the America magazine: "When I speak about Ukraine I speak about the cruelty because I have much information about the cruelty of the troops that come in. Generally, the cruelest are perhaps those who are of Russia but are not of the Russian tradition, such as the Chechens, the Buryati and so on" (Editors, 2022). However, the claim about the disproportional representation of Russia's ethnic minorities in the military has never been evaluated empirically and was based on anecdotal evidence.

The aim of this paper is to provide an empirical estimate of the regional and ethnic gaps in the Russian military fatalities in Ukraine. I conduct a secondary data analysis of a data base collected by a team of volunteers that includes information about 9,500 killed Russian servicemen. I code ethnicity on the basis of their first names and surnames and estimate mortality rates and relative risks of dying by region and ethnic group. The results show that some ethnic minorities (Buryats and Tuvans) are indeed overrepresented among the Russian fatalities, compared to their population share. However, this is likely a consequence of socio-economic inequalities across Russia's regions rather than the policy of ethnic profiling and discrimination.

2 Data

The Russian military do not release information about the ethnic composition of the army and casualties in the war in Ukraine. Our data come from a crowd sourced data set collected by a team of volunteers, supported by two media organisations (the BBC News Russian and Mediazona). The BBC News Russian and Mediazona regularly publish statistical summaries of these data (Ivshina, 2022; Mediazona, 2022). The volunteers have been monitoring the social media (primarily VK and Telegram that have large following in Russia) and other websites and collected posts and articles reporting deaths of the Russian military in Ukraine. The original social media reports were made by regional and local governments in Russia, educational institutions, non-governmental organisations, newspapers, and in some cases the families of killed soldiers. The data collectors archived the reports using the Archive.today service (`https://archive.ph`).

As of 1 December 2022, the data set contained 9,592 unique records of killed Russian servicemen. The data include the names of killed soldiers and, where available, their dates of birth and death, military unit and rank. The period covered is from 24 February (the first day of Russia's invasion) to 1 December 2022. The data collectors also coded the region where the death was reported (or alternatively where the family of the killed person lived or where he was buried). The data include records from Crimea (annexed by Russia in 2014) but not from the regions in Eastern and Southern Ukraine annexed by Russia in 2022.

The data set does not include all the deaths of the Russian military in Ukraine. Some deaths were not reported in the social media. In other cases, dead soldiers may have been recorded as missing. The data collectors attempted to estimate the completeness of the data set by comparing the records with the photographs of the tombs of killed soldiers in Russian cemeteries. A rough estimate was that the data set may include about 50% of the killed servicemen buried in Russia.

Ethnicity of the killed soldiers is not part of the original data set. I code ethnicity from first names and surnames using a previously developed machine learning classifier (Bessudnov et al., 2021). The classifier showed the accuracy of 0.92 for 15 major ethnic groups populating Russia; however, it has some limitations. Tracing the patriline origins of surnames can only be a proxy for ethnicity as ethnic names do not necessarily imply ethnic identity. Also, there are some ethnic groups living in Russia who have predominantly ethnically Russian names (these are mostly, but not only, groups of the Finno-Ugric and Turkic origins in the Volga region) and whose classification using the names-based method is not possible. At the same time, most ethnic groups do have rather characteristic names.

To calculate the mortality rates by region and the relative risks for ethnic groups I use data from the Russian 2020-21 census (for the male population size by region) and 2010 census (for the population ethnic composition as data on ethnicity from the 2020-21 census have not yet been published). The data on the percentage of the population with incomes below the subsistence level come from the Russian Statistical Service official publications ((Rosstat, 2021)).

The data and the R code for replication analysis are available at a Github repository: `https://github.com/abessudnov/ruCasualtiesPublic`. The names of the killed servicemen and their implied ethnicity have been removed from the data set. However, 94% of the records contain links to archived original social media posts and other reports so that the information could be verified. The author of the paper was not involved in data collection and coding.

3 Findings

3.1 Ethnic inequalities in fatalities

Table 3.1 shows the numbers of killed servicemen and the relative risks of dying for several ethnic groups, some of which were aggregated. The relative risk was calculated by dividing the proportion of names associated with these ethnic groups in the data set of killed servicemen by the proportion of the ethnic groups in Russia's male population according to the 2010 census. The relative risks greater than one indicate a higher probability of being killed, compared to the population share.

Table 1: Ethnic inequalities in the Russian military fatalities

Ethnic group	Number of killed servicemen	Percent of killed servicemen	Percent in the male Russian population[a]	Relative risk	95% confidence interval[b]
Russian / Ukrainian / Belarusian[c]	7430	77.5	81.7	0.95	[0.94; 0.96]
North Caucasus[d]	756	7.9	5.3	1.48	[1.38; 1.59]
Bashkir / Tatar	544	5.7	4.8	1.19	[1.10; 1.29]
Buryat	192	2.0	0.3	5.77	[5.01; 6.63]
Tuvan	104	1.1	0.2	6.26	[5.17; 7.58]
Others	566	5.9	7.7	0.76	[0.70; 0.83]

[a] According to the 2020-21 census.

[b] Calculated with the *RelRisk* function from the *DescTools* R package using the normal approximation method.

[c] Ethnic Russians, Ukrainians and Belarusians cannot be separated on the basis of name only.

[d] The group "North Caucasus" includes Chechens, Ingushes, Kabardins, Adyghe, Karachays, Balkars, Ossetians, and main Dagestani ethnic groups.

The majority of killed Russian servicemen had Slavic names, and most of them were ethnic Russians. (It is not possible to separate ethnic Russians, Ukrainians and Belarusians on the basis of the name only. An ethnic Ukrainian can have a Russian-origin surname, and the other way round.) However, compared to their share in the male population, ethnic Russians are somewhat underrepresented among the fatalities (RR = 0.95). Bashkirs and Tatars, two Turkic-origin groups mostly living in the Volga region, are slightly overrepresented (RR = 1.1). The overrepresentation is higher for ethnic groups from the North Caucasus (RR = 1.5). They include Chechens who, according to media reports, played an active role in Russia's military campaign. Chechnya has an autonomous status in Russia, and the data on Chechen casualties are likely to be more incomplete than the data from other regions, so the estimated relative risk for the Northern Caucasus group should be taken as a lower bound.

The two groups with the highest relative risks ($RR \approx 6$) are Buryats and Tuvans, populating the ethnic republic in Eastern Siberia near the Russian-Mongolian border. As the relative risk suggests, their share among the killed military is about six times higher than their population share.

3.2 Regional inequalities in fatalities

Next I estimate mortality rates per 100,000 men of the working age for Russian regions. The results are presented in Table 3.2 and Map 1.

Table 2: Regional inequalities in the Russian military fatalities

	Region name	Region name (ISO 3166-2)	Number of killed servicemen	Mortality rate per 100,000 men[b]	95% confidence interval
1	Buryatia	RU-BU	353	126.6	[113.9; 140.7]
2	Tuva	RU-TY	115	123.8	[102.7; 149.2]
3	Altai Republic	RU-AL	46	79.0	[58.5; 106.3]
4	Zabaykalsky	RU-ZAB	225	75.5	[66.1; 86.2]
5	North Ossetia	RU-SE	148	71.4	[60.6; 84.2]
6	Kostroma	RU-KOS	108	66.8	[55.0; 80.9]
7	Pskov	RU-PSK	107	61.5	[50.7; 74.7]
8	Sakhalin	RU-SAK	89	60.4	[48.8; 74.7]
9	Yevreyskaya	RU-YEV	24	52.8	[34.6; 79.9]
10	Kamchatka	RU-KAM	43	45.2	[33.1; 61.5]
11	Ulyanovsk	RU-ULY	154	44.3	[37.7; 52.0]
12	Chukotka	RU-CHU	7	43.4	[19.0; 93.7]
13	Komi	RU-KO	92	41.6	[33.7; 51.2]
14	Magadan	RU-MAG	19	41.6	[25.8; 66.3]
15	Mari El	RU-ME	81	41.0	[32.7; 51.2]
16	Nenets	RU-NEN	5	39.3	[14.5; 97.5]
17	Sevastopol[a]	UA-40	68	37.8	[29.6; 48.2]
18	Orenburg	RU-ORE	200	37.1	[32.2; 42.7]
19	Bryansk	RU-BRY	126	36.5	[30.5; 43.6]
20	Volgograd	RU-VGG	282	35.8	[31.8; 40.3]
21	Dagestan	RU-DA	354	35.7	[32.2; 39.7]
22	Kalmykia	RU-KL	28	34.9	[23.7; 51.2]
23	Khakassia	RU-KK	52	34.5	[26.1; 45.7]
24	Kurgan	RU-KGN	73	34.3	[27.0; 43.3]
25	Kaliningrad	RU-KGD	108	33.7	[27.8; 40.9]
26	Kirov	RU-KIR	107	33.3	[27.4; 40.4]

Table 2: Regional inequalities in the Russian military fatalities

	Region name	Region name (ISO 3166-2)	Number of killed servicemen	Mortality rate per 100,000 men[b]	95% confidence interval
27	Karelia	RU-KR	49	32.6	[24.4; 43.4]
28	Ryazan	RU-RYA	102	31.9	[26.1; 38.9]
29	Chuvashia	RU-CU	107	31.2	[25.7; 37.9]
30	Ivanovo	RU-IVA	83	31.1	[24.9; 38.7]
31	Chechnya	RU-CE	135	29.2	[24.6; 34.7]
32	Udmurtia	RU-UD	121	28.9	[24.1; 34.7]
33	Chelyabinsk	RU-CHE	290	28.8	[25.6; 32.3]
34	Kursk	RU-KRS	87	28.1	[22.6; 34.8]
35	Altai Krai	RU-ALT	166	28.0	[23.9; 32.6]
36	Astrakhan	RU-AST	79	27.4	[21.8; 34.3]
37	Adygea	RU-AD	39	26.7	[19.3; 36.9]
38	Tambov	RU-TAM	77	26.6	[21.2; 33.5]
39	Arkhangelsk	RU-ARK	74	26.0	[20.5; 32.8]
40	Perm	RU-PER	189	25.8	[22.3; 29.8]
41	Saratov	RU-SAR	190	25.7	[22.2; 29.7]
42	Omsk	RU-OMS	136	24.9	[21.0; 29.6]
43	Murmansk	RU-MUR	53	24.9	[18.8; 32.8]
44	Kabardino-Balkaria	RU-KB	67	24.3	[19.0; 31.1]
45	Amur	RU-AMU	58	24.2	[18.6; 31.6]
46	Belgorod	RU-BEL	109	24.0	[19.8; 29.1]
47	Bashkortostan	RU-BA	297	24.0	[21.4; 26.9]
48	Sverdlovsk	RU-SVE	306	23.8	[21.3; 26.7]
49	Krasnodar	RU-KDA	419	23.4	[21.3; 25.8]
50	Khabarovsk	RU-KHA	93	23.0	[18.7; 28.4]
51	Oryol	RU-ORL	47	22.6	[16.8; 30.4]
52	Primorsky	RU-PRI	130	22.5	[18.9; 26.9]
53	Stavropol	RU-STA	194	21.7	[18.8; 25.1]
54	Crimea[a]	UA-43	119	21.4	[17.8; 25.7]
55	Vologda	RU-VLG	69	20.9	[16.4; 26.6]
56	Penza	RU-PNZ	75	20.5	[16.3; 25.9]

Table 2: Regional inequalities in the Russian military fatalities

	Region name	Region name (ISO 3166-2)	Number of killed servicemen	Mortality rate per 100,000 men[b]	95% confidence interval
57	Rostov	RU-ROS	261	20.5	[18.1; 23.2]
58	Karachay-Cherkessia	RU-KC	28	20.1	[13.6; 29.5]
59	Vladimir	RU-VLA	79	20.0	[15.9; 25.0]
60	Smolensk	RU-SMO	52	19.8	[14.9; 26.2]
61	Novgorod	RU-NGR	32	19.7	[13.7; 28.2]
62	Ingushetia	RU-IN	34	19.6	[13.8; 27.8]
63	Nizhny Novgorod	RU-NIZ	179	19.6	[16.9; 22.8]
64	Irkutsk	RU-IRK	133	19.4	[16.3; 23.1]
65	Voronezh	RU-VOR	133	19.2	[16.1; 22.9]
66	Tver	RU-TVE	67	18.5	[14.5; 23.7]
67	Tyumen	RU-TYU	81	17.8	[14.2; 22.3]
68	Lipetsk	RU-LIP	57	17.2	[13.1; 22.4]
69	Novosibirsk	RU-NVS	139	16.9	[14.3; 20.1]
70	Tatarstan	RU-TA	196	16.5	[14.3; 19.0]
71	Krasnoyarsk	RU-KYA	139	16.0	[13.4; 19.0]
72	Yaroslavl	RU-YAR	55	16.0	[12.1; 20.9]
73	Samara	RU-SAM	149	15.9	[13.5; 18.7]
74	Mordovia	RU-MO	36	15.2	[10.8; 21.3]
75	Tula	RU-TUL	65	14.7	[11.5; 18.9]
76	Sakha	RU-SA	44	14.2	[10.5; 19.3]
77	Kemerovo	RU-KEM	95	12.6	[10.2; 15.5]
78	Tomsk	RU-TOM	39	12.1	[8.7; 16.7]
79	Kaluga	RU-KLU	38	11.5	[8.3; 16.0]
80	Leningrad	RU-LEN	71	11.1	[8.7; 14.1]
81	Yamalo-Nenets	RU-YAN	12	7.1	[3.8; 12.7]
82	Khanty-Mansi	RU-KHM	37	6.7	[4.8; 9.4]
83	Moscow Oblast	RU-MOS	149	5.3	[4.5; 6.2]
84	St.Petersburg	RU-SPE	79	4.6	[3.7; 5.8]
85	Moscow	RU-MOW	54	1.3	[1.0; 1.7]

Table 2: Regional inequalities in the Russian military fatalities

Region name	Region name (ISO 3166-2)	Number of killed servicemen	Mortality rate per 100,000 men[b]	95% confidence interval

[a] *Notes:* The table includes two Ukrainian regions, Crimea and Sevastopol, that were annexed by Russia in 2014. The Russian government established administration in these regions and recruits the military personnel there. The Ukrainian territories annexed by Russia in 2022 are not included.

[b] The mortality rates were calculated per 100,000 men of the working age (defined by the Russian Statistical Service as 16 to 61.5 years), as per the 2020-21 census.

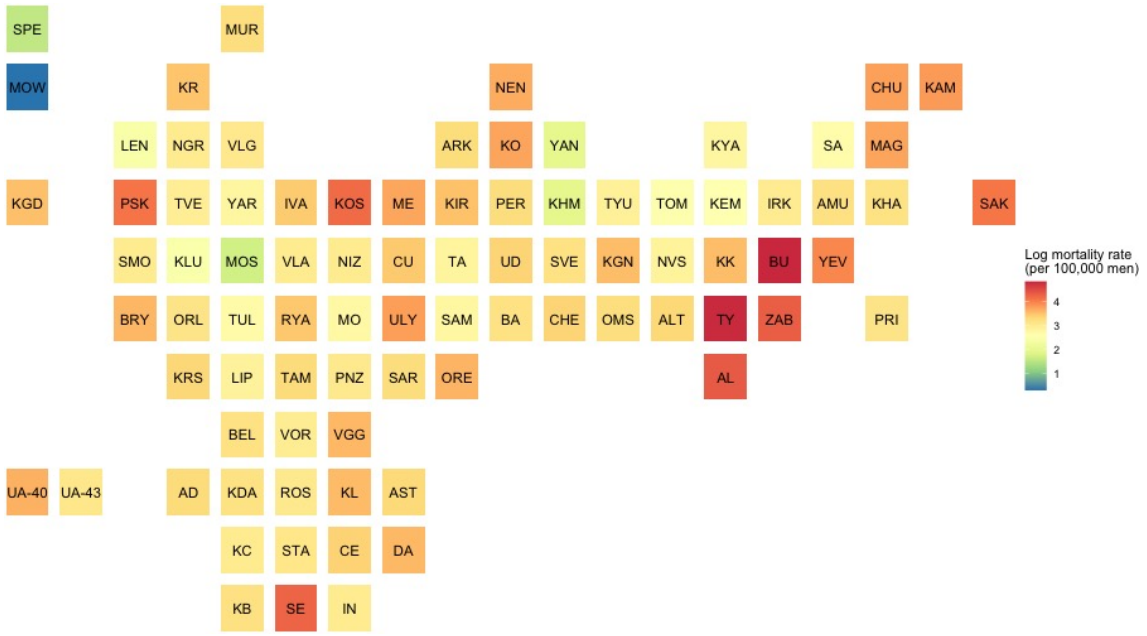

Figure 1: Regional differences in the Russian military mortality rates

Buryatia and Tuva, two ethnic republics in Eastern Siberia, are at the top of the list with the mortality rates of about 120 per 100,000 men of the working age. More generally, out of 10 regions with the highest mortality rates, seven are either in Siberia or the Russian Far East. One region (North Ossetia) is in the Caucasus, and two (Kostroma and Pskov) are in Central Russia, with large airborne troops bases located in these regions. The lowest mortality rates are in Moscow and St Petersburg metropolitan areas, as well as in Yamalo-Nenets and Khanty-Mansi, two oil and gas rich regions in Western Siberia. A man in Buryatia is about 100 times more likely to die in Ukraine compared to a man from Moscow.

Generally, the data suggest two patterns. First, some ethnic republics (Buryatia, Tuva, Altai, North Ossetia) have high mortality rates, while others (Sakha, Mordovia, Tatarstan) do not. Second, it is

mostly poor regions without natural resources that tend to have the largest fatalities. Next I evaluate the relative importance of ethnic and socio-economic factors in contributing to the regional fatality gap.

3.3 Ethnic and socio-economic factors in the fatality gap

The population ethnic composition across Russia's ethnic republics varies. Some republics have mostly non-ethnically Russian population, while in others ethnic Russians are a majority. By looking at the mortality rates for different ethnic groups within the same region we can disentangle the relative contribution of ethnic and regional socio-economic inequalities into the total fatality gap.

Table 3.3 presents the results from this analysis. I calculate the share of non-Slavic names in the regional fatalities and divide it by the share of the non-Slavic population (as in the 2010 census). The resulting relative risk shows to what extent non-Slavs are overrepresented in the regional fatalities, compared to their population share.

Table 3: Ethnic inequality in fatalities within regions

Region name	Percent of non-Slavic names among the killed	Percent of non-Slavic population[a]	Relative risk	95% confidence interval[b]
Astrakhan	60.8	32.9	1.85	[1.51; 2.15]
Buryatia	43.6	34.0	1.28	[1.13; 1.43]
Tuva	91.3	83.1	1.10	[1.02; 1.15]
Kalmykia	75.0	70.2	1.07	[0.81; 1.24]
Bashkortostan	66.0	63.6	1.04	[0.95; 1.12]
Karachay-Cherkessia	71.4	69.5	1.03	[0.76; 1.22]
Chechnya	99.3	99.0	1.00	[0.97; 1.01]
Dagestan	96.9	97.0	0.99	[0.97; 1.01]
Ingushetia	97.1	99.3	0.98	[0.86; 1.00]
Kabardino-Balkaria	76.1	78.9	0.97	[0.82; 1.07]
Tatarstan	49.0	61.0	0.80	[0.69; 0.92]
North Ossetia	64.2	80.9	0.79	[0.69; 0.88]
Adygea	23.1	37.1	0.62	[0.34; 1.03]

[a] In the male population; according to the 2010 census. Non-Slavic was defined as non ethnically Russian, Belarusian, or Ukrainian.

[b] Calculated with the *RelRisk* function from the *DescTools* R package using the normal approximation method.

In most regions the relative risk measuring non-Slavic overrepresentation in the fatalities is close to one suggesting little or no ethnic inequality within regions. In Buryatia the relative risk is 1.28 (down from 5.77 for Buryats before controlling for region), and in Tuva 1.1 (down from 6.26). The highest ethnic overrepresentation is in Astrakhan, a mostly ethnically Russian region with large Kazakh and Tatar minorities. In Tatarstan and North Ossetia ethnic Russians seem to be overrepresented among the killed. Note, however, that there was a rise in ethnic intermarriage in these regions (Bessudnov and Monden, 2021), and making assumptions about people's ethnicity on the basis of names may be less reliable there.

Figure 2 explores correlations between the regional mortality rates and a) the percentage of the population with income below the subsistence level ($r = 0.48$), and b) the percentage of non-ethnically Russian population ($r = 0.24$). Table 4 shows the results of a regression analysis. Once the share of the population with income below the subsistence level is controlled for, the association between regional mortality rates and the percentage of non-ethnically Russian population disappears.

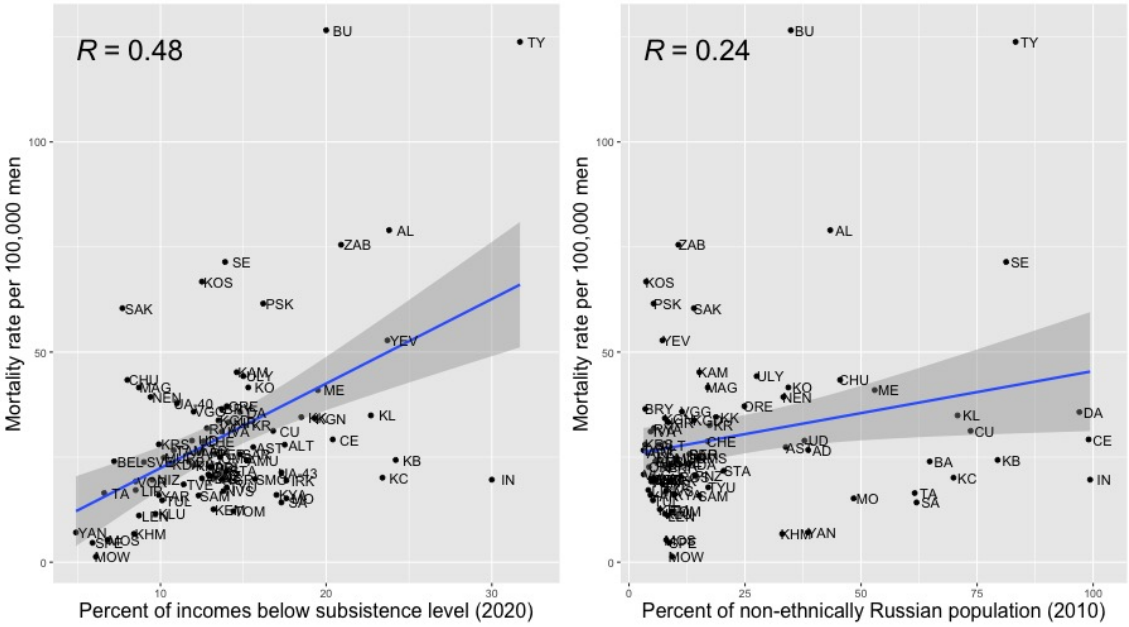

Figure 2: Correlation between regional mortality rates and a) percent of the poor, b) percent of non-ethnically Russian population

4 Conclusion

This paper shows that some ethnic minority groups are overrepresented among the Russian military fatalities in Ukraine. These are Buryats and Tuvans in particular and to a lesser extent the North Caucasian groups. This likely reflects the overrepresentation of these groups in the military units sent to Ukraine, and more generally in the Russian army. Given the lack of data on the ethnic composition

Table 4: Linear model: Regional characteristics and mortality rates

	Dependent variable:
	Mortality rate per 100,000 men
Percent below subsistence level (2020)	2.06
	[1.13; 2.99]
Percent non-ethnically Russian population (2010)	−0.004
	[−0.19; 0.18]
Constant	1.66
	[−10.48; 13.79]
Observations	83
R^2	0.24

Note: 95% confidence intervals in the brackets.
Crimea and Sevastopol excluded from the analysis.

of the Russian army, we are unable to estimate the risks of death by ethnic group conditional on serving in the army and participating in the war in Ukraine.

However, once we control for region, ethnic inequalities in mortality are reduced substantially. While overall the risks of dying in Ukraine for an ethnic Buryat are six times higher than for an ethnically Russian man, they are only about 30% higher if the point of comparison is an ethnically Russian man living in Buriatiya. Generally, the pattern is that the fatality rates are higher in economically deprived regions, some of which are ethnic republics. It is unlikely that the ethnic gaps in mortality are driven mostly by the conscious policies of ethnic profiling and discrimination. Regional socio-economic inequalities affecting the rates of recruitment in the military appear to be a more important factor.

It is not a specifically Russian phenomenon that careers in the military are more attractive for young men in poorer areas with fewer civilian opportunities. Kriner and Shen (2010) provide evidence of the casualty gaps in the US military in the WWII and the wars in Korea, Vietnam and Iraq. Maynard (2009) estimate the correlation coefficients between mortality rates and per capita income at the US state level for the wars in Vietnam ($r = 0.51$) and Iraq ($r = 0.52$). The correlation coefficients are very similar to the one estimated with the Russian data in this study ($r = 0.48$). Unlike Russia, the USA do not have specifically 'ethnic' states (although of course the share of Black and Hispanic population varies across the country), and hence this does not lead to large ethnic and racial inequalities in military casualties. African Americans were overrepresented among the casualties in the early years of the Vietnam war, while in more recent conflicts, including the war in Iraq, they were underrepresented (and Hispanics were somewhat overrepresented) (Armor and Gilroy, 2010; Burk and Espinoza, 2012; Buzzell and Preston, 2007). In the UK, ethnic minorities are underrepresented in the military compared to their share in the population (Salem et al., 2022). The description of the inequalities in the Russian army's mortality

in Ukraine contributes to the comparative analysis of ethnic and regional differences in military service and casualties.

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